

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Ju-hyung KIM et al.

Application No. 10/727,714

Group Art Unit: 1745

Confirmation No. 6907

Filed: December 5, 2003

Examiner: Keith D. Walker

For: PROTECTOR AND LITHIUM SECONDARY BATTERY HAVING THE SAME

REPLY BRIEF UNDER 37 C.F.R § 41.41

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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer mailed May 20, 2008, the due date for the Reply Brief being July 21, 2008 (July 20, 2008 being a Federal holiday). This response addresses only those points raised in the Examiner's Answer that Applicants believe would benefit from further explanation or argument. This Reply Brief is intended to supplement rather than replace the original arguments presented in Applicants' Appeal Brief filed on January 8, 2008. Any claims or issues not specifically addressed below rely upon these original arguments.

I. Real Party in Interest

The real party of interest remains as identified in the Appeal Brief pursuant to 37 C.F.R. §41.37(c)(1)(i).

II. Related Appeals and Interferences

Although the real party in interest has other appeals and interferences, none of the other pending appeals and interferences is believed to directly affect or be directly affected by, or have any bearing upon the decision of the Board of Patent Appeals and Interferences in this appeal.

III. Status of Claims

The status of the claims remains as identified in the Appeal Brief pursuant to 37 C.F.R. §41.37(c)(1)(iii), except that claim 20 is canceled in an Amendment under 37 CFR 41.33 filed herewith.

IV. Status of Amendments

The status of the amendments remains as identified in the Appeal Brief pursuant to 37 C.F.R. §41.37(c)(1)(iv), except that the Amendment under 37 CFR 41.33 submitted herewith has not yet been entered.

V. Summary of the claimed subject matter

The summary of the claimed subject matter remains as identified in the Appeal Brief pursuant to 37 C.F.R. §41.37(c)(1)(v).

VI. Grounds of rejection

The grounds of rejection remain as identified in the Appeal Brief pursuant to 37 C.F.R. §41.37(c)(1)(vi).

VII. Arguments

1. Claims 12, 15 – 17, 27, 28 and 35 - 38 are patentably distinguishable over Watanabe (U.S. Patent No. 6,492,058), Morishita (U.S. Patent No. 5,976,729) and Pedicini (U.S. Patent No. 5,188,909).

The combination of Watanabe, Morishita and Pedicini does not teach or suggest all of the express limitations of claims 12, 15 – 17, 27, 28 and 35 - 38

The following arguments supplement rather than replace the original arguments presented in Applicants' Appeal Brief filed on September 10, 2007. Any claims or issues not specifically addressed below rely upon these original arguments.

As review, independent claim 12 relates to a lithium battery comprising a generation element that generates electrical power; a can to house the generation element, the can including first and second surfaces, the first surface including a first terminal electrically connected to the generation element and the second surface including a second terminal electrically connected to the generation element; an output lead, made of a first material or an alloy thereof, electrically coupled to the second terminal; a first lead, electrically coupled to the first terminal, including a layer of the first material or an alloy thereof and a cladding layer made of a second material or an alloy thereof; and a safety device that is electrically coupled to both the output lead and the first lead, the safety device comprising a portion of the first lead where the cladding layer of the first lead is connected to the can, a positive temperature coefficient (PTC) element, adjacent to the portion of the first lead such that the PTC element is separated from the can by the portion of the first lead, to interrupt a current between the output lead and the first lead upon a temperature and/or a voltage increase in the can, and an extension of the first material or an alloy thereof of the output lead adjacent to the PTC element. Similarly, independent claim 38 relates to a lithium battery including a generation element to generate electrical power housed in a can including first and second terminals electrically coupled to the generation element and also comprising the output lead, first lead and safety device, recited in the same terms as in claim 12.

Contrary to what is alleged by the Examiner, Watanabe, Morishita and Pedicini, singly or combined, do not teach or suggest all of the limitations of independent claims 12 and 38. In

particular, Watanabe, Morishita and Pedicini, singly or combined, do not describe the structure of a safety device that includes a portion of the first lead, a PTC element that is separated from the can by the portion of the first lead and an extension of the material of the output lead adjacent to the PTC element (see, for example, FIG. 5B of the present application). Watanabe, which is the only reference that mentions a PTC element, does not teach or suggest any structure in which the PTC element is separated from the can by the portion of the first lead. Instead, Watanabe explicitly states that its PTC device 13 (FIG. 10 of Watanabe) is disposed in contact with the battery surface. (col. 8, lines 44 – 45 of Watanabe) to allow heat from the battery to be transmitted to the PTC element. Although the Examiner argues that the PTC device would have the same function located away from the can, the Examiner does not provide any credible reason why a person skilled in the art would consider making this modification to relocate the PTC element away from direct contact with the battery case and does not provide any reason, in the absence of the Applicants' disclosure, why a person skilled in the art would consider providing an portion of the first lead between a PTC device and the can. Moreover, Morishita does not describe a PTC element at all; therefore, contrary to what is alleged by the Examiner, Morishita does not teach locating a PTC element on top of a lead and does not teach or suggest that a portion of a lead is between a PTC element and the can. Accordingly, Watanabe, Morishita and Pedicini, singly or combined, do not teach or suggest all of the features of claims 12, 15 – 17, 27, 28 and 35 – 38, and therefore, the rejection of claims 12, 15 – 17, 27, 28 and 35 – 38 under 35 U.S.C. §103 over Watanabe (U.S. Patent No. 6,492,058) in view of Morishita (U.S. Patent No. 5,976,729) and Pedicini (U.S. Patent No. 5,188,909) should be reversed.

VIII. Conclusion

In view of the law and facts stated herein, the Appellant respectfully submits that the Examiner has failed to cite a reference or combination of references sufficient to maintain

obviousness rejections of the rejected claims and has failed to rebut the arguments in the Appeal Brief dated February 8, 2008, the Amendment dated October 10, 2007 and in the applicants' previous responses.

For all the foregoing reasons, the Appellant respectfully submits that the cited prior art does not teach or suggest the presently claimed invention. The claims are patentable over the prior art of record and the Examiner's findings of unpatentability regarding claims 12, 15 – 17, 27, 28 and 35 – 38 should be reversed.

The Commissioner is hereby authorized to charge any additional fees required in connection with the filing of the Appeal Brief to our Deposit Account No. 50-3333.

Respectfully submitted,

STEIN, MCEWEN & BUI LLP

Date: July 21, 2008

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IX. Claims Appendix

12. A lithium battery comprising:

a generation element which generates electrical power;

a can to house the generation element, the can including first and second surfaces, the first surface including a first terminal electrically connected to the generation element and the second surface including a second terminal electrically connected to the generation element;

an output lead, made of a first material or an alloy thereof, electrically coupled to the second terminal;

a first lead, electrically coupled to the first terminal, including a layer of the first material or an alloy thereof and a cladding layer made of a second material or an alloy thereof; and

a safety device that is electrically coupled to both the output lead and the first lead, the safety device comprising:

a portion of the first lead where the cladding layer of the first lead is connected to the can,

a positive temperature coefficient (PTC) element, adjacent to the portion of the first lead such that the PTC element is separated from the can by the portion of the first lead, to interrupt a current between the output lead and the first lead upon a temperature and/or a voltage increase in the can, and

an extension of the first material or an alloy thereof of the output lead adjacent to the PTC element.

15. The lithium battery of claim 12, further comprising a safety vent which exhausts internal gas when pressure inside the can increases past a predetermined level, the safety vent being at the second surface of the can.

16. The lithium battery of claim 15, wherein:

the can further comprises an opening through which the generation element is introduced into the can, and a cap which closes the opening, and the safety vent is disposed on the cap.

17. The lithium battery of claim 12, wherein the safety device interrupts current

flowing therethrough when a voltage of the battery sharply increases.

27. The lithium battery of claim 12, wherein the first lead is attached to the first

surface using ultrasonic welding.

28. The lithium battery of claim 12, wherein the first lead is attached to the first

surface using resistance welding.

35. The lithium battery of claim 12, wherein the first material comprises nickel and the

second material comprises aluminum.

36. The lithium battery of claim 12, further comprising a protection circuit electrically coupled in series between a lead attached to the second terminal and the output lead to prevent over-charging and/or over-discharging.

37. The lithium battery of claim 35, wherein the protection circuit, the leads, and the safety device are disposed exterior to the can.

38. A lithium battery including a generation element to generate electrical power

housed in a can including first and second terminals electrically coupled to the generation element, the battery comprising:

an output lead, made of a first material or an alloy thereof, electrically coupled to the second terminal;

a first lead, electrically coupled to the first terminal, including a layer of the first material or an alloy thereof and a cladding layer made of a second material or an alloy thereof; and

a safety device that is electrically coupled to both the output lead and the first lead, the safety device comprising:

a portion of the first lead where the cladding layer of the first lead is connected to the can,

a positive temperature coefficient (PTC) element, adjacent to the portion of the first lead such that the PTC element is separated from the can by the portion of the first lead, to interrupt a current between the output lead and the first lead upon a temperature and/or a voltage increase in the can, and

an extension of the first material or an alloy thereof of the output lead adjacent to the PTC element.

X. Evidence Appendix

NONE

XI. Related Proceedings Appendix

NONE